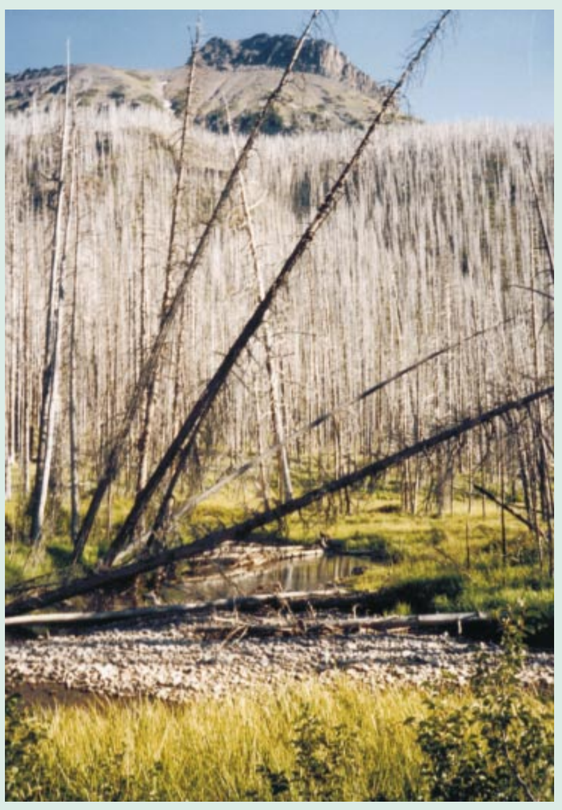
Figure 7. The measurement of pool characteristics involves measuring the longitudinal dimension, then locating transects through the pool, along which soundings are made to determine residual volume and fine-sediment volume at low flow.

LARGE ORGANIC DEBRIS

Large organic debris (LOD) was inventoried in all 20 study reaches (fig. 8). Fallen trees are delivered to streams by bank erosion (figs. 9 and 10), landslides (fig. 2), debris flows (fig. 12), and floods.

Figure 8. The inventory of large organic debris involves measuring the length and diameter of each piece of debris within or suspended above the active channel. Shown here is a LOD jam in Crow Creek (site 179).



Figures 9 (left) and 10 (right). Jones Creek near its mouth (left) has widened and produced the largest debris loading among all reaches studied. At Jones Creek site 92 (right), a sharp bend is migrating laterally into a stand of burned timber.

Figure 11. Large organic debris jam near Jones Creek site 73.

Smaller size of LOD pieces in Jones Creek (fig. 13)(mean diameter 10 percent less, and mean volume 16 percent less) reflects increased loading from younger, fire-killed trees. LOD was better anchored (fig. 14) and more frequently occurred in contact with other LOD in Crow Creek. LOD jams (fig. 11) were larger and a greater percentage of the debris present occurred in large jams (accumulations of 10 or more pieces) in Jones Creek. Although mobility was not measured directly in 1998-99, these differences suggest that LOD mobility continues to be greater in Jones Creek, as was reported by M.K. Young (USDA Forest Service) from a study during 1990-1991.

A multiple linear regression model for active-channel LOD loading was fitted using mean bankfull width and difference between streams (WS) as independent variables. The model fitted using all 20 reaches explained 45.1 percent of variance with a RSE of 7.5 m^3 per 100-m length of channel, but site 93 was a large positive residual outlier. Excluding site 93, the trimmed model explains 35.9 percent of the variance with a RSE of 5.2 m^3, and is significant ($F = 4.48$, $p = 0.0284$). The difference between streams is significant ($t = -2.881$, $p = 0.0109$), indicating that the LOD loading in Crow Creek is 4.0 m^3 greater (with 1.4 m^3 standard error) than that in Jones Creek, after accounting for channel width differences. Variability in LOD loadings among the reaches of Jones Creek was much greater than that for Crow Creek. This reflects both a greater tendency for Jones Creek reaches to have small loadings if they had few large jams, and the influence of site 093 (fig. 9) at the mouth of Jones Creek, which had seven large LOD jams and the largest LOD loading of any study reach.

Figure12. Post-fire debris flows were evident in several tributaries of Jones Creek that were scoured and widened.

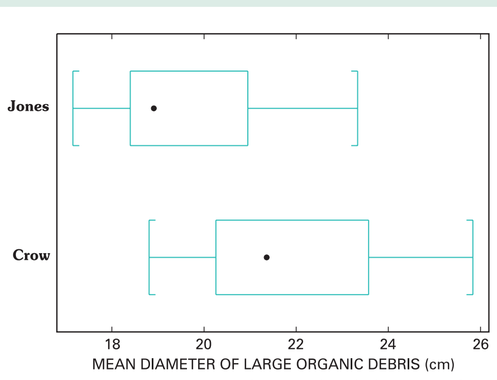


Figure 13. Pieces of woody debris in Crow Creek are significantly larger than those in Jones Creek.

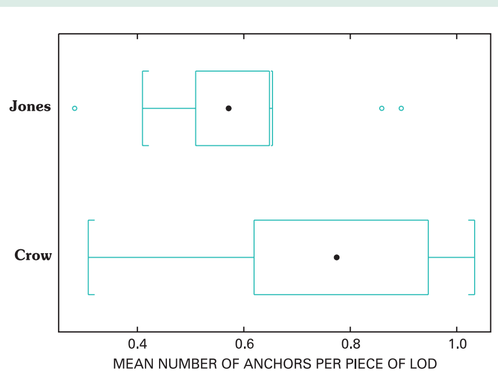


Figure 14. Average anchoring of woody debris was greater in Crow Creek than in the burned watershed. Crow Creek reaches also had a larger percentage of LOD being anchored (55%) than did Jones Creek (46%).

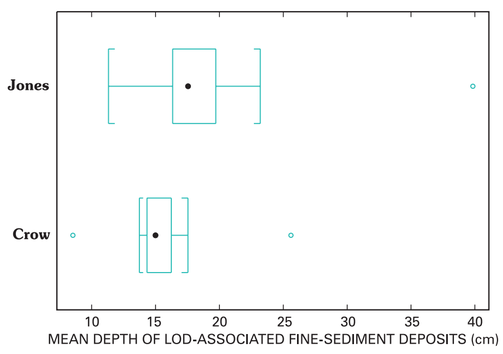


Figure 15. Deposits of fine sediment associated with woody debris were significantly thicker in Jones Creek (burned) than in Crow Creek.

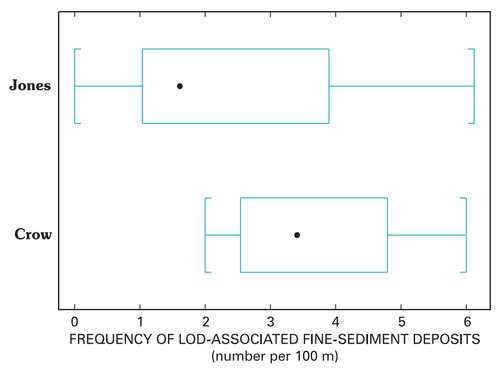


Figure 16. Deposits of fine sediment associated with woody debris were more common in Crow Creek, where debris was more common and tended to be more uniformly distributed, than in Jones Creek.

Figure 17. Lodgepole pines are scattered throughout the burned area, and some have begun producing seed cones in the past two growing seasons. However, forest regrowth has yet to begin for most burned areas in these watersheds.

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